

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
21 April 2005 (21.04.2005)

PCT

(10) International Publication Number  
**WO 2005/036234 A1**

(51) International Patent Classification<sup>7</sup>: **G02B 26/02**  
(21) International Application Number:  
PCT/US2004/026500

(74) Agents: FULTON, Lisa, P. et al.; Office of Intellectual  
Property Counsel, Post Office Box 33427, Saint Paul, MN  
55133-3427 (US).

(22) International Filing Date: 13 August 2004 (13.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03021893.7 27 September 2003 (27.09.2003) EP

(71) Applicant (for all designated States except US): 3M IN-  
NOVATIVE PROPERTIES COMPANY [US/US]; 3M  
Center, Post Office Box 33427, Saint Paul, MN 55133-  
3427 (US).

(72) Inventors; and

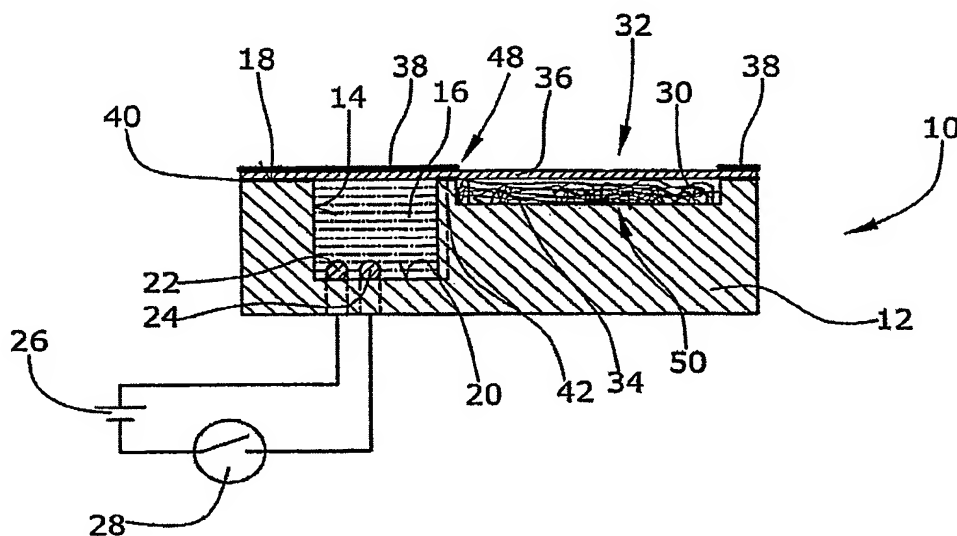
(75) Inventors/Applicants (for US only): SCHUMACHER,  
Knut [DE/DE]; 3M Germany, Carl-Schurz-Strasse 1,  
41453 Neuss (DE). KUEPPER, Anton [DE/DE]; 3M  
Germany, Carl-Schurz-Strasse 1, 41453 Neuss (DE).  
SCHULZE, Gerhard, Friedrich, Walter [DE/DE]; 3M  
Germany, Hansastrasse 9, 41453 Neuss (DE).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: DISPLAY DEVICE FOR IRREVERSIBLY SWITCHING FROM A FIRST STATE TO A SECOND STATE



(57) Abstract: The display device (10) capable of irreversibly switching from a first indicating state to a second indicating state comprises a chamber (14) containing an electrolytic liquid (16) and having at least one exit opening (46), and at least two electrodes (22, 24) located in said chamber (14) and in contact with said electrolytic liquid (16) as well as subjectable to electric voltage, wherein, upon application of electric voltage of a predetermined level to said electrodes (22, 24), gas is generated in said chamber (14) causing the pressure within said chamber (14) to exceed a threshold value such that liquid (16) irreversibly exits said chamber (14) through said at least one exit opening (46) thereby switching from the first indicating state to the second indicating state.



**Published:**

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*